THE INTER-COXAL LOBE OF CERTAIN CRAYFISHES.

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I have been enabled to make the observations embodied in this note, at the Biological Laboratory of the Sydney University, through the kindness of Dr. Haswell, whom I have to thank for having directed my attention to the subject, and for having supplied me with the requisite materials.

In a figure of the branchial region of *Astacopsis Franklinii*, in Huxley's paper 'On the Classification of the Crayfishes,'* there are represented certain appendages connected with the branchiæ, though there is no reference to them in the text, nor has attention, as far as I can ascertain, been specially directed to them. These appendages in the case of *Astacopsis serratus*, and the same holds good of *A. bicarinatus*, are visible before the removal of the branchiostegites, provided the animal be turned sternal side uppermost and the legs separated. They may then be seen as triangular-shaped bodies lying under the edges of the branchiostegites, and attached to the posterior faces of certain thoracic limbs.

On removing the branchiostegites the appendages are partly hidden from view by the bases of the podobranchiæ; but on these being turned aside they are seen to be behind and below the anterior arthrobranchiæ, and perpendicular to and below the posterior arthrobranchiæ; each of them being attached by a small neck to the membrane which, arising from the posterior aspect of the coxopodite, reaches to the epimeron above, and behind is attached to the arthrophragm of the particular limb.

Examined more closely, the upper portion of the anterior face of one of these bodies, which may be called the *inter-coxal lobes*, is alone united to the arthrodial membrane; while the lower surface of the anterior face is applied to the base of the coxopodite, which is smooth and convex.

*P.Z.S., 1878, p. 765.

The surface of the appendage that is first exposed on removing the base of the podobranchia is somewhat of an oblong in shape. The upper portion is triangular, convex, light in colour, and free from setæ: the lower portion is likewise convex, but dark in colour, and covered with setæ which project prominently from its surface. Both the upper and lower portions of this surface are chitinous.

The anterior face mentioned above as being applied to the base of the coxopodite, is triangular in outline, concave, dark in colour, and covered with setæ. The lower portion of this face is chitinous: the upper membranous, being in fact a continuation of the arthrodial membrane.

The posterior face of the body is concave, lower portion chitinous and covered with setæ; the upper free from setæ and membranous. Thus from the concave shape of the anterior face, the body is able to fit well on the convex base of the coxopodite, while its posterior concave surface likewise fits the convex anterior border of the coxopodite of the following thoracic limb when this limb is in a forward position.

The inter-coxal lobe would thus appear to act as a valve between the thoracic limbs and the branchiostegite, preventing the too ready entrance of foreign bodies.

Many forms were examined to ascertain if this inter-coxal lobe was present. In *Astacus fluviatilis* it is entirely absent as such, the only representative being a small hard ridge on the arthrodial membrane of the fourth pair of legs. In *Homarus vulgaris* the lobes occur in the thoracic limbs of the 9th-13th segments inclusive. In *Nephrops norvegicus* on 8th-13th inclusive. In *Ibacus* and *Arctus* they become calcified, and quite immovable, being attached to the arthrophragm of the limb.

No representative of this structure was found in any of the Anomura or Brachyura examined.

The absence of any exopodite in the thoracic appendages of *Astacus* as stated by Huxley*, at any stage of its development,

* The Crayfish, page 219.

led me to enquire whether the structures above described might not represent this part of the limb in an abortive form and with its position altered; but exopodites of the ordinary form are, as I have ascertained, entirely wanting also in *Astacopsis* in which the inter-coxal lobes are highly developed; the latter cannot therefore be transformations of the ordinary exopodites; nor can they be exopodites which are abortive from the outset, since in *Homarus*, in which they are highly developed, the larva when hatched has exopodites of the ordinary form attached at the basi-ischiopodite joint.